

Example #3. What is the tension of the cable of an elevator of mass 550 kg that is accelerating upwards at the rate of 4.5 m/s^2 ?



$\uparrow a = 4.5 \text{ m/s}^2 \Rightarrow F_T > F_g$

$$\begin{aligned} F_{\text{net}} &= ma \\ &= 550(4.5) \\ &= 2475 \text{ N} \end{aligned}$$

$$\rightarrow F_{\text{net}} = F_T - F_g$$

$$2475 = F_T - 5390$$

$$\boxed{F_T = 7.9 \times 10^3 \text{ N}}$$